

RECEIVED

MAY 01 2002

TECH CENTER 1600/2900

ENTERED

1600

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/548,998C

DATE: 04/24/2002
 TIME: 15:48:30

Input Set : A:\BC1002 US NA Seq Listing.txt
 Output Set: N:\CRF3\04242002\I548998C.raw

5 <110> APPLICANT: Ebersole, Richard C.
 7 Hendrickson, Edwin
 11 <120> TITLE OF INVENTION: NUCLEIC ACID FRAGMENTS FOR THE IDENTIFICATION OF
 DECHLORINATING

12 BACTERIA
 16 <130> FILE REFERENCE: BC1002 US NA
 20 <140> CURRENT APPLICATION NUMBER: US 09/548,998C
 22 <141> CURRENT FILING DATE: 2000-04-14
 26 <150> PRIOR APPLICATION NUMBER: 60/129,511
 28 <151> PRIOR FILING DATE: 1999-04-15
 32 <160> NUMBER OF SEQ ID NOS: 60
 36 <170> SOFTWARE: Microsoft Office 97
 40 <210> SEQ ID NO: 1

42 <211> LENGTH: 24
 44 <212> TYPE: DNA
 46 <213> ORGANISM: Dehalococcoides ethenogenes
 50 <400> SEQUENCE: 1

24

51 attttctagc gagactgccc cgcg
 54 <210> SEQ ID NO: 2
 56 <211> LENGTH: 1377
 58 <212> TYPE: DNA
 60 <213> ORGANISM: Dehalococcoides ethenogenes
 64 <400> SEQUENCE: 2

65 gatgaacgct agcggcgtgc cttatgcatg caagtcgaac ggtcttaagc aattaagata	60
67 gtggcaaacg ggtgagtaac gcgtaagtaa cctacctcta agtgggggat agcttcggga	120
69 aactgaaggt aataccgcat gtgatgggct gacataagtc ggttcattaa agccgcaagg	180
71 tgcttggtga ggggcttgcg tccgattagc tagttggtgg ggtaatggcc taccaaggct	240
73 tcgatcggtg gctggtctga gaggatgatc agccacactg ggactgagac acggcccaga	300
75 ctccctacggg aggcagcagc aaggaatcct gggcaatggg cgaaagcctg acccagcaac	360
77 gccgcgtgag ggatgaaggc ttccgggttg taaacctctt ttcacaggga agaataatga	420
79 cggtacctgt ggaataagct tcggctaact acgtgccagc agccgcggta atacgtagga	480
81 agcaagcgtt atccggattt attgggcgta aagtgagcgt aggtggtctt tcaagttgga	540
83 tgtgaaattt cccggcttaa ccgggacgtg tcattcaata ctggttgact agagtacagc	600
85 aggagaaaac ggaattcccg gtgtagtggt aaaatgcgta gatatcgga ggaacaccag	660
87 aggcgaaggc ggttttctag gttgtcactg aactagaggc tcgaaagcgt ggggagcgaa	720
89 cagaattaga tactctggta gtccacgcct taaactatgg aactaggta tagggagtat	780
91 cgaccctctc tgtgccgaag ctaacgctyt aagtgtcccg cctggggagt acggtcgcaa	840
93 ggctaaaact caaaggaatt gacgggggccc cttacaagca gcggagcgtg tggtttaatt	900
95 cgatgctaca cgaagaacct taccaagatt tgacatgcat gaagtagtga accgaaaggg	960
97 aaacgacctg ttaagtcagg agtttgcaca ggtgctgcat ggctgtcgtc agctcgtgcc	1020
99 gtgaggtggt tgggttaagtc ctgcaacgag cgcaaccctt gttgctagtt aaattttcta	1080
101 gcgagactgc cccgcgaaac ggggaggaag gtggggatga cgtcaagtca gcatggcctt	1140
103 tatatcttgg gctacacaca cgctacaatg gacagaacaa taggttgcaa cagtgtgaac	1200
105 tggagctaat ccccaaagct gtcctcagtt cggattgcag gctgaaaccc gcctgcatga	1260

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/548,998C

DATE: 04/24/2002
TIME: 15:48:30

Input Set : A:\BC1002 US NA Seq Listing.txt
Output Set: N:\CRF3\04242002\I548998C.raw

```

107 agttggagtt gctagtaacc gcatatcagc aaggtgcggt gaatacgttc tcgggccttg 1320
109 tacacaccgc ccgtcacgtc atgaaagccg gtaacacttg aagtcgatgt gcccaacc 1377
112 <210> SEQ ID NO: 3
114 <211> LENGTH: 1378
116 <212> TYPE: DNA
118 <213> ORGANISM: Dehalococcoides ethenogenes
122 <400> SEQUENCE: 3
123 gatgaacgct agcggcgtgc cttatgcatg caagtcgaac ggtcttaagc aattaagata 60
125 gtggcaaacg ggtgagtaac gcgtaagtaa cctacctcta agtgggggat agcttcggga 120
127 aactgaaggt aataccgcat gtggtgggcc gacataagtt ggttcactaa agccgtaagg 180
129 tgcttggtga ggggcttgcg tccgattagc tagttggtgg ggtaacggcc taccaaggct 240
131 tcgatcggta gcttggtctg agaggatgat cagccacact gggactgaga cacggcccag 300
133 actcctacgg gaggcagcag caaggaatct tgggcaatgg gcgaaagcct gaccagcaa 360
135 cgccgcgtga gggatgaagg ctctcggggt gtaaacctct ttccacaggg aagaataatg 420
137 acggtacctg tggaataagc ttcggctaac tacgtgccag cagccgcggt aatacgtagg 480
139 aagcaagcgt tatccggatt tattgggcgt aaagtgagcg taggtggtct ttcaagttgg 540
141 atgtgaaatt tcccggctta accgggacgt gtcattcaat actggtggac tagagtacag 600
143 caggagaaaa cggaattccc ggtgtagtgg taaaatgcgt agatatcggg aggaacacca 660
145 gaggcgaagg cggttttcta ggttgctact gacactgagg ctcgaaagcg tggggagcga 720
147 acagaattag atactctggt agtccacgcc ttaaactatg gacactaagt atagggagta 780
149 tcgaccctct ctgtgccgaa gctaacgctt taagtgtccc gcctggggag tacggtcgca 840
151 aggctaaaac tcaaaggaat tgacgggggc ccgcacaagc agcggagcgt gtggtttaat 900
153 tcgatgctac acgaagaacc ttaccaagat ttgacatgca tgaagtagtg aaccgaaagg 960
155 gaaacgacct gttaagtcag gagtttgcac aggtgctgca tggctgtcgt cagctcgtgc 1020
157 cgtgaggtgt ttggttaagt cctgcaacga gcgcaaccct tggtgctagt taaattttct 1080
159 agcgagactg ccccgcgaaa cggggaggaa ggtgggggat acgtcaagtc agcatggcct 1140
161 ttatatcttg ggctacacac acgctacaat ggacagaaca ataggttgca acagtgtgaa 1200
163 ctggagctaa tcctcaaagc tgtcctcagt tcggattgca ggctgaaacc cgcctgcatg 1260
165 aagttggagt tgctagtaac cgcatatcag caaggtgcg tgaatacgtt ctcgggcctt 1320
167 gtacacaccg ccgtcacgt catgaaagcc ggtaacactt gaagtcgatg tgccaacc 1378
170 <210> SEQ ID NO: 4
172 <211> LENGTH: 1377
174 <212> TYPE: DNA
176 <213> ORGANISM: Dehalococcoides ethenogenes
180 <400> SEQUENCE: 4
181 gatgaacgct agcggcgtgc cttatgcatg caagtcgaac ggtcttaagc aattaagata 60
183 gtggcgaacg ggtgagtaac gcgtaagtaa cctacctcta agtgggggat agcttcggga 120
185 aactgaaggt aataccgcat gtggtgggcc gacatatggt ggttcactaa agccgtaagg 180
187 cgcttggtga ggggcttgcg tccgattagc tagttggtgg ggtaatggcc taccaaggct 240
189 tcgatcggta gctggtctga gaggatgatc agccacactg ggactgagac acggcccaga 300
191 ctccctacggg aggcagcagc aaggaatctt gggcaatggg cgaaagcctg acccagcaac 360
193 gccgcgtgag ggatgaagge ttctcgggtg taaacctctt ttcataggga agaataatga 420
195 cggtaacctgt ggaataagct tcggctaact acgtgccagc agccgcggtg atacgtagga 480
197 agcaagcgtt atccggattt attgggcgta aagtgagcgt aggtggtctt tcaagttgga 540
199 tgtgaaatth cccggcttaa ccgggacgag tcattcaata ctggtggact agagtacagc 600
201 aggagaaaaa ggaattcccg gtgtagtggt aaaatgcgta gatatcgga ggaacaccag 660
203 aggcgaaggc ggtttttctag gttgtcactg acactgaggc tcgaaagcgt ggggagcgaa 720
205 cagaattaga tactctggta gtccacgcct taaactatgg acactaggta tagggagtat 780
207 cgaccctctc tgtgccgaag ctaacgcttt aagtgtcccc cctggggagt acggtcgcaa 840

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/548,998C

DATE: 04/24/2002

TIME: 15:48:30

Input Set : A:\BC1002 US NA Seq Listing.txt

Output Set: N:\CRF3\04242002\I548998C.raw

```

209 ggctaaaact caaaggaatt gacggggggcc cgcacaagca gcgagcgctg tggtttaatt 900
211 cgatgctaca cgaagaacct taccaagatt tgacatgcat gtagtagtga actgaaaggg 960
213 gaacgacctg ttaagtcagg aacttgcaca ggtgctgcat ggctgtcgtc agctcgtgcc 1020
215 gtgaggtggt tggttaagtc ctgcaacgag cgcaaccctt gttgctagtt aaattttcta 1080
217 gcgagactgc cccgcgaaac ggggaggaag gtggggatga cgtcaagtca gcatggcctt 1140
219 tatatcttgg gctacacaca cgctacaatg gacagaacaa taggttgcaa cagtgtgaac 1200
221 tggagctaata ccccaaagct gtcctcagtt cggattgcag gctgaaaccc gcctgcatga 1260
223 agttggagtt gctagtaacc gcatatcagc atggtgcggt gaatacgttc tcgggccttg 1320
225 tacacaccgc ccgtcacgtc atgaaagccg gtaacacttg aagtcgatgt gcccaacc 1377
228 <210> SEQ ID NO: 5
230 <211> LENGTH: 1377
232 <212> TYPE: DNA
234 <213> ORGANISM: Dehalococcoides ethenogenes
238 <400> SEQUENCE: 5
239 gatgaacgct agcggcgctgc cttatgcatg caagtcgaac ggtcttaagc aattaagata 60
241 gtggcgaacg ggtgagtaac gcgtaagtaa cctacctcta agtgggggat agcttcggga 120
243 aactgaaggt aataccgcat gtggtgggccc gacatatggt ggttcactaa agccgtaagg 180
245 cgcttggtga ggggcttgccg tccgattagc tagttggtgg ggtaatggcc taccaaggct 240
247 tcgatcggta gctggtctga gaggatgac agccacactg ggactgagac acggcccaga 300
249 ctctacggg aggcagcagc aaggaatctt gggcaatggg cgaaagcctg acccagcaac 360
251 gccgcgtgag ggatgaaggc tttcggggtg taaacctctt ttcataaggga agaataatga 420
253 cggtagctgt ggaataagct tcggctaact acgtgccagc agccgcggta atacgtagga 480
255 agcaagcgtt atccggattt attgggcgta aagtgagcgt aggtggtctt tcaagttgga 540
257 tgtgaaattt cccggcttaa ccgggacgag tcattcaata ctgttgact agagtacagc 600
259 aggagaaaac ggaattcccg gtgtagtggt aaaatgcgta gatatcgga ggaacaccag 660
261 aggcgaaggc ggttttctag gttgtcactg aactgagggc tcgaaagcgt ggggagcgaa 720
263 cagaattaga tactctggta gtccacgcct taaactatgg aactaggta tagggagtat 780
265 cgaccctctc tgtgccgaag ctaacgcttt aagtgtcccg cctggggagt acggtcgcaa 840
267 ggctaaaact caaaggaatt gacggggggcc cgcacaagca gcgagcgctg tggtttaatt 900
269 cgatgctaca cgaagaacct taccaagatt tgacatgcat gtagtagtga actgaaaggg 960
271 gaacgacctg ttaagtcagg aacttgcaca ggtgctgcat ggctgtcgtc agctcgtgcc 1020
273 gtgaggtggt tggttaagtc ctgcaacgag cgcaaccctt gttgctagtt aaattttcta 1080
275 gcgagactgc cccgcgaaac ggggaggaag gtggggatga cgtcaagtca gcatggcctt 1140
277 tatatcttgg gctacacaca cgctacaatg gacagaacaa taggttgcaa cagtgtgaac 1200
279 tggagctaata ccccaaagct gtcctcagtt cggattgcag gctgaaaccc gcctgcatga 1260
281 agttggagtt gctagtaacc gcatatcagc atggtgcggt gaatacgttc tcgggccttg 1320
283 tacacaccgc ccgtcacgtc atgaaagccg gtaacacttg aagtcgatgt gcccaacc 1377
286 <210> SEQ ID NO: 6
288 <211> LENGTH: 1377
290 <212> TYPE: DNA
292 <213> ORGANISM: Dehalococcoides ethenogenes
296 <400> SEQUENCE: 6
297 gatgaacgct agcggcgctgc cttatgcatg caagtcgaac ggtcttaagc aattaagata 60
299 gtggcgaacg ggtgagtaac gcgtaagtaa cctacctcta agtgggggat agcttcggga 120
301 aactgaaggt aataccgcat gtggtgggccc gacataagtt ggttcactaa agccgtaagg 180
303 tgcttggtga ggggcttgccg tccgattagc tagttggtgg ggtaacggcc taccaaggct 240
305 tcgatcggta gctggtctga gaggatgac agccacactg ggactgagac acggcccaga 300
307 ctctacggg aggcagcagc aaggaatctt gggcaatggg cgaaagcctg acccagcaac 360
309 gccgcgtgag ggatgaaggc tctcggggtg taaacctctt ttcacaggga agaataatga 420

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/548,998C

DATE: 04/24/2002

TIME: 15:48:30

Input Set : A:\BC1002 US NA Seq Listing.txt

Output Set: N:\CRF3\04242002\I548998C.raw

```

311 cggtagctgt ggaataagct tcggctaact acgtgccagc agccgcggta atacgtagga 480
313 agcaagcggt atccggatgt attgggcgta aagtgcgct aggtggtctt tcaagttgga 540
315 tgtgaaatgt cccggcttaa ccgggacgtg tcattcaata ctggtggact agagtacagc 600
317 aggagaaaac ggaattcccg gtgtagtggt aaaatgcgta gatatcgga ggaacaccag 660
319 aggcgaaggc ggttttctag gttgtcactg acactgagcg tcgaaagcgt ggggagcgaa 720
321 cagaattaga tactctggta gtccacgcct taaactatgg acactaggt tagggagtat 780
323 cgacctctc tgtgccgaag ctaacgcttt aagtgtcccg cctggggagt acggtcgcaa 840
325 ggctaaaact caaaggaatt gacggggggc cgcacaagca gcggagcgtg tggtttaatt 900
327 cgatgctaca cgaagaacct taccaagatt tgacatgcat gaagtagtga accgaaaggg 960
329 aaacgacctg ttaagtcagg agtttgcaca ggtgctgcat ggctgtcgtc agctcgtgcc 1020
331 gtgaggtgtt tgggttaagtc ctgcaacgag cgcaaccctt gttgctagtt aaattttcta 1080
333 gcgagactgc cccgcgaaac ggggaggaag gtggggatga cgtcaagtca gcatggcctt 1140
335 tatactcttg gctacacaca cgctacaatg gacagaacaa taggttgcaa cagtgtgaac 1200
337 tggagctaata cctcaaagct gtcctcagtt cggattgcag gctgaaacct gcctgcatga 1260
339 agttggagtt gctagtaacc gcatatcagc aaggtgcggt gaatacgttc tcgggccttg 1320
341 tacacaccgc ccgtcacgtc atgaaagccg gtaacacttg aagtcgatgt gcccaacc 1377
344 <210> SEQ ID NO: 7
346 <211> LENGTH: 1443
348 <212> TYPE: DNA
350 <213> ORGANISM: Dehalococcoides ethenogenes
354 <220> FEATURE:
356 <221> NAME/KEY: misc_feature
358 <222> LOCATION: (1353)..(1353)
360 <223> OTHER INFORMATION: N = A or G or C or T/U, unknown or other (any)
364 <400> SEQUENCE: 7
365 gatgaacgct agcggcgtgc cttatgcatg caagtcgaac ggtcttaagc aattaagata 60
367 gtggcaaacg ggtgagtaac gcgtaagtaa cctacctcta agtgggggat agcttcggga 120
369 aactgaaggt aataccgcat gtgatgggct gacataagtc ggttcattaa agccgcaagg 180
371 tgcttggtga ggggcttgcg tccgattagc tagttggtgg ggtaatggtc taccaaggct 240
373 tcgatcggtg gctgggtctga gaggatgatc agccacactg ggactgagac acgggccaga 300
375 ctccctacggg aggcagcagc aaggaatctt gggcaatggg cgaaagcctg acccagcaac 360
377 gccgcgtgag ggatgaaggc tttcgggttg taaacctctt ttcacaggga agaataatga 420
379 cggtagctgt ggaataagct tcggctaact acgtgccagc agccgcggta atacgtaggg 480
381 aagcaagcgt tatccggatt tattgggcgt aaagtgcgct taggtggtct ttcaagttgg 540
383 atgtgaaatt tcccggctta accgggacgt gtcattcaat actgttgac tagagtacag 600
385 caggagaaaa cggaattccc ggtgtagtgg taaaatgcgt agatatcggg aggaacacca 660
387 gaggcgaagg cggttttcta ggtgtcact gacactgagg ctcgaaagcg tggggagcga 720
389 acagaattag atactctggt agtccacgcc ttaactatg gacactaggt ataggagta 780
391 tcgacctctc ctgtgccgaa gctaacgctt taagtgtccc gcctggggag tacggtcgca 840
393 aggcataaac tcaaaggaat tgacgggggc ccgcacaagc agcggagcgt gtggtttaat 900
395 tcgatgctac acgaagaact taccaagatt tgacatgcat gaagtagtga accgaaaggg 960
397 aaacgacctg ttaagtcagg agtttgcaca ggtgctgcat ggctgtcgtc agctcgtgcc 1020
399 gtgaggtgtt ggggttaagtc ctgcaacgag cgcaaccctt ttgctagtta aattttctag 1080
401 cgagactagc gagactgccc cgcgaaacgg ggaggaaggt ggggatgacg tcaagtcagc 1140
403 atggccttta tatcttgggc tacacacacg ctacaatgga cagaacaata ggttgcaaca 1200
405 gtgtgaactg gagctaattc ccaaagctgt cctcagttcg gattgcaggc tgaaacctgc 1260
407 ctgcatgaag ttggagttgc tagtaaccgc atatcagcaa ggtgcggtga atacgttctc 1320
W--> 409 gggccttgta cacaccgccc gtcacgtcat ganagccggt aacacttgaa gtcgatgtgc 1380
411 caaccgcaag gaggcagtcg ccgaggggtg gactggtaat tgggacgaag tcgtaacaag 1440

```


RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/548,998C

DATE: 04/24/2002
 TIME: 15:48:30

Input Set : A:\BC1002 US NA Seq Listing.txt
 Output Set: N:\CRF3\04242002\I548998C.raw

1443

413 gta
 416 <210> SEQ ID NO: 8
 418 <211> LENGTH: 47
 420 <212> TYPE: DNA
 422 <213> ORGANISM: Artificial Sequence
 426 <220> FEATURE:
 428 <223> OTHER INFORMATION: Consensus sequence derived from DHE-PL, DHE-STF, DHE-DAB,
 DHE-PIN
 429 and DHE-DLL at bases E180-E226.
 431 <220> FEATURE:
 433 <221> NAME/KEY: misc_feature
 435 <222> LOCATION: (5)..(5)
 437 <223> OTHER INFORMATION: R = A or G
 441 <220> FEATURE:
 443 <221> NAME/KEY: misc_feature
 445 <222> LOCATION: (11)..(11)
 447 <223> OTHER INFORMATION: Y = C or T
 451 <220> FEATURE:
 453 <221> NAME/KEY: misc_feature
 455 <222> LOCATION: (18)..(18)
 457 <223> OTHER INFORMATION: W = A or T
 461 <220> FEATURE:
 463 <221> NAME/KEY: misc_feature
 465 <222> LOCATION: (21)..(21)
 467 <223> OTHER INFORMATION: Y = C or T
 471 <220> FEATURE:
 473 <221> NAME/KEY: misc_feature
 475 <222> LOCATION: (28)..(28)
 477 <223> OTHER INFORMATION: Y = C or T
 481 <220> FEATURE:
 483 <221> NAME/KEY: misc_feature
 485 <222> LOCATION: (37)..(37)
 487 <223> OTHER INFORMATION: Y = C or T
 491 <220> FEATURE:
 493 <221> NAME/KEY: misc_feature
 495 <222> LOCATION: (42)..(42)
 497 <223> OTHER INFORMATION: Y = C or T
 501 <400> SEQUENCE: 8
 502 tgtgrtgggc ygacatawgt yggttcayta aagccgyaag gygcttg 47
 505 <210> SEQ ID NO: 9
 507 <211> LENGTH: 20
 509 <212> TYPE: DNA
 511 <213> ORGANISM: Dehalococcoides ethenogenes
 515 <400> SEQUENCE: 9 20
 516 aagtcgaacg gtcttaagca
 519 <210> SEQ ID NO: 10
 521 <211> LENGTH: 20
 523 <212> TYPE: DNA
 525 <213> ORGANISM: Dehalococcoides ethenogenes
 529 <400> SEQUENCE: 10

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/09/548,998C

DATE: 04/24/2002
TIME: 15:48:31

Input Set : A:\BC1002 US NA Seq Listing.txt
Output Set: N:\CRF3\04242002\I548998C.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:7; N Pos. 1353

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/548,998C

DATE: 04/24/2002

TIME: 15:48:31

Input Set : A:\BC1002 US NA Seq Listing.txt

Output Set: N:\CRF3\04242002\I548998C.raw

L:409 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:1320